

7.1 - Developing Systems of Linear Equations Review (see p. 397; complete on lined paper)

For the word problems in #1-10:

- create a linear system to model the given situation
- verify the given solution in both equations of your linear system

- Tickets are sold for the school play. Felix buys 3 adult tickets and 2 student tickets. He pays \$31. Ellen buys 1 adult ticket and 1 student ticket. She pays \$12.

Solution: adult tickets: 7
student ticket: 5

$3A + 2T = 31$
 $A + T = 12$
 $3(7) + 2(5) = 21 + 10 = 31$
 $7 + 5 = 12$
- Eight-passenger vans and six-passenger vans carried 110 people. There were 15 vans in total.

Solution: eight-passenger vans: 10
six-passenger vans: 5

$E + P = 15$
 $8E + 6P = 110$
 $10 + 5 = 15$
 $8(10) + 6(5) = 80 + 30 = 110$
- A gardener bought carrot seeds for \$2 a packet and squash seeds for \$5 a packet. He spent \$38 and bought 13 packets of seeds.

Solution: carrot seed packets: 9
squash seed packets: 4

$C + Q = 13$
 $2C + 5Q = 38$
 $9 + 4 = 13$
 $2(9) + 5(4) = 18 + 20 = 38$
- A school sold 175 smoothies to raise money for charity. A banana smoothie cost \$3 and a peach mango smoothie cost \$5. The school raised \$625.

Solution: banana smoothies: 125
peach mango smoothies: 50

$B + P = 175$
 $3B + 5P = 625$
 $125 + 50 = 175$
 $3(125) + 5(50) = 375 + 250 = 625$
- One afternoon, the Winnipeg Art Gallery sold 300 adult and student tickets. An adult ticket cost \$8 and a student ticket cost \$6. The total money collected was \$2000.

Solution: adult tickets: 100
student tickets: 200

$A + T = 300$
 $8A + 6T = 2000$
 $100 + 200 = 300$
 $8(100) + 6(200) = 800 + 1200 = 2000$
- The total number of wheels on the bicycles and tricycles in a store is 45. There are 10 more bicycles than tricycles.

Solution: bicycles: 15
tricycles: 5

$2B + 3T = 45$
 $T + 10 = B$
 $2(15) + 3(5) = 30 + 15 = 45$
 $5 + 10 = 15$
- Dalton has \$5 and \$10 bills in his wallet. He has 12 bills in total with a value of \$75.

Solution: \$5: 9
\$10: 3

$F + T = 12$
 $5F + 10T = 75$
 $9 + 3 = 12$
 $5(9) + 10(3) = 45 + 30 = 75$
- Julie bought 8 books. Some books cost \$13 each and the rest cost \$24 each. She spent a total of \$137.

Solution: \$13 books: 5
\$24 books: 3

$H + W = 8$
 $13H + 24W = 137$
 $5 + 3 = 8$
 $13(5) + 24(3) = 65 + 72 = 137$
- A test has twenty questions worth 100 points. There are short answer questions worth 3 points each and long answer questions worth 11 points each.

Solution: short answer questions: 15
long answer questions: 5

$T + L = 20$
 $3T + 11L = 100$
 $15 + 5 = 20$
 $3(15) + 11(5) = 45 + 55 = 100$

10. The cost of a buffet dinner for a family of six was \$48.50. The prices were \$11.75 per adult and \$6.25 per child. / #A
 Solution: adults: 2 $11.75A + 6.25C = 48.50$
 children: 4 $A + C = 6$

review of ch 5, 6:

11. Graph using the slope-intercept method: $y = 2x - 5$

12. Graph using the slope-point method: $y + 4 = \frac{1}{3}(x - 2)$
 point $(2, -4)$ $m = \frac{1}{3}$

13. Graph using the intercepts:

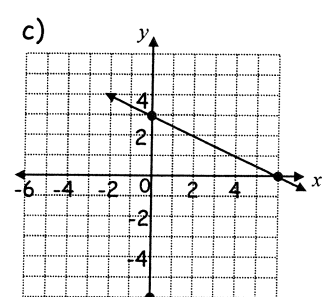
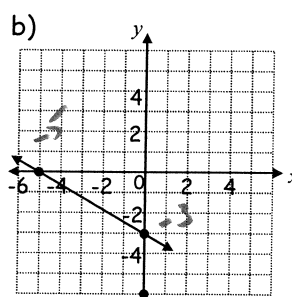
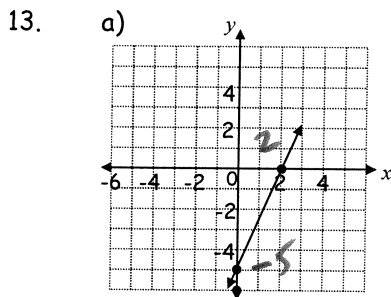
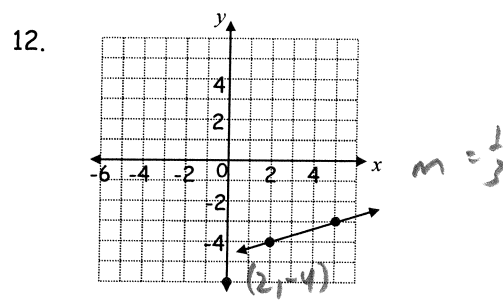
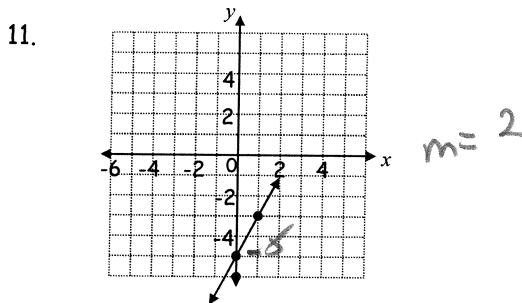
a) $5x - 2y = 10$ b) $3x + 5y + 15 = 0$ c) $\frac{1}{2}x + y = 3$

14. Find the equation of the line passing through $(0, -3)$ with a slope of 5. Express your answer in slope-intercept form. $y + 3 = 5(x - 0) \rightarrow y = 5x - 3$

15. Find the equation of the line passing through $(-1, 4)$ and $(2, -5)$. Express your answer in slope-point form. $m = \frac{4 + 5}{-1 - 2} = \frac{9}{-3} = -3$

Answers:

1 - 10. student work and verifying



14. $y = 5x - 3$

15. $y - 4 = -3(x + 1)$
 or $y + 5 = -3(x - 2)$